CHAPTER 27
ELECTRICAL

User note:

About this chapter: *Electrical systems and components are integral to most structures; therefore, it is necessary for the code to address their installation and protection. Structures depend on electricity for the operation of many life safety systems including fire alarm, smoke control and exhaust, fire suppression, fire command and communication systems. Since power supply to these systems is essential, Chapter 27 addresses where standby and emergency power must be provided.*

SECTION 2701
GENERAL

~~**2701.1 Scope.**~~
~~The provisions of this chapter and NFPA 70 shall govern the design, construction, erection and installation of the electrical components, appliances, equipment and systems used in buildings and structures covered by this code. The *International Fire Code*, the *International Property Maintenance Code* and NFPA 70 shall govern the use and maintenance of electrical components, appliances, equipment and systems. The *International Existing Building Code* and NFPA 70 shall govern the alteration, repair, relocation, replacement and addition of electrical components, appliances, or equipment and systems.~~

2701.1 Scope. 780 CMR 27.00 governs the electrical components, equipment and systems used in buildings and structures covered by 780 CMR. Electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of 527 CMR 12.00.

SECTION 2702
EMERGENCY AND STANDBY POWER SYSTEMS

[F] 2702.1 General.
Emergency power systems and standby power systems shall comply with Sections 2702.1.1 through 2702.1.8.

[F] 2702.1.1 Stationary generators.
Stationary emergency and standby power generators required by ~~this code~~ 780 CMR shall be listed in accordance with UL 2200. For air quality control for point source generation see 310 CMR 7:00 *Air Pollution Control*.

[F] 2702.1.2 Fuel-line piping protection.
Fuel lines supplying a generator set inside a *high-rise building* shall be separated from areas of the *building* other than the room the generator is located in by one of the following methods:

1. A fire-resistant pipe-protection system that has been tested in accordance with UL

1489. The system shall be installed as tested and in accordance with the manufacturer's installation instructions, and shall have a rating of not less than 2 hours. Where the *building* is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, the required rating shall be reduced to 1 hour.

2. An assembly that has a fire-resistance rating of not less than 2 hours. Where the building is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, the required fire-resistance rating shall be reduced to 1 hour.

3. Other approved methods.

[F] 2702.1.3 Installation.
Emergency power systems and standby power systems required by this code or the *International Fire Code* shall be installed in accordance with the *International Fire Code*, NFPA 70, NFPA 110 and NFPA 111.

[F] 2702.1.4 Load transfer.
Emergency power systems shall automatically provide secondary power within 10 seconds after primary power is lost, unless specified otherwise in this code. Standby power systems shall automatically provide secondary power within 60 seconds after primary power is lost, unless specified otherwise in this code.

[F] 2702.1.5 Load duration.
Emergency power systems and standby power systems shall be designed to provide the required power for a minimum duration of 2 hours without being refueled or recharged, unless specified otherwise in this code.

[F] 2702.1.6 Uninterruptable power source.
An uninterrupted source of power shall be provided for equipment where required by the manufacturer's instructions, the listing, this code or applicable referenced standards.

[F] 2702.1.7 Interchangeability.
Emergency power systems shall be an acceptable alternative for installations that require standby power systems.

[F] 2702.1.8 Group I-2 occupancies.
In Group I-2 occupancies located in *flood hazard areas* established in Section 1612.3, where new essential electrical systems are installed, and where new essential electrical system generators are installed, the systems and generators shall be located and installed in accordance with ASCE 24. Where connections for hookup of temporary generators are provided, the connections shall be located at or above the elevation required in ASCE 24.

[F] 2702.2 Where required.
Emergency and standby power systems shall be provided where required by Sections 2702.2.1 through 2702.2.19.

[F] 2702.2.1 Ambulatory care facilities.
Essential electrical systems for *ambulatory care facilities* shall comply with Section 422.6.

[F] 2702.2.2 Elevators and platform lifts.
Standby power shall be provided for elevators and platform lifts as required ~~in Sections 1009.4.1, 1009.5, 3003.1, 3007.8 and 3008.8~~ by 780 CMR and 524 CMR.

[F] 2702.2.3 Emergency responder communication coverage systems.
Standby power shall be provided for in-building 2-way emergency responder communication coverage systems required in Section 918 and the *International Fire Code*. The standby power supply shall be capable of operating the in-building 2-way emergency responder communication coverage system at 100-percent system operation capacity for a duration of not less than 12 hours.

[F] 2702.2.4 Emergency voice/alarm communication systems.
Standby power shall be provided for emergency voice/alarm communication systems in accordance with NFPA 72.

[F] 2702.2.5 Exhaust systems.
Standby power shall be provided for common exhaust systems for domestic kitchens located in multistory structures as required in Section 505.5 of the *International Mechanical Code.* Standby power shall be provided for common exhaust systems for clothes dryers located in multistory structures as required in Section 504.11 of the *International Mechanical Code* and Section 614.11 of the *International Fuel Gas Code*.

[F] 2702.2.6 Exit signs.
Emergency power shall be provided for exit signs as required in Section 1013.6.3. The system shall be capable of powering the required load for a duration of not less than 90 minutes.

[F] 2702.2.7 Gas detection system.
Emergency or standby power shall be provided for gas detection systems in accordance with the *International Fire Code*.

[F] 2702.2.8 Group I-2 occupancies.
Essential electrical systems for Group I-2 occupancies shall be in accordance with Section 407.11.

[F] 2702.2.9 Group I-3 occupancies.
Emergency power shall be provided for *power-operated* doors and locks in Group I-3 occupancies as required in Section 408.4.2.

[F] 2702.2.10 Hazardous materials.
Emergency or standby power shall be provided in occupancies with hazardous materials where required by the *International Fire Code*.

[F] 2702.2.11 High-rise buildings.
Emergency and standby power shall be provided in high-rise buildings as required in Section 403.4.8.

[F] 2702.2.12 Hydrogen fuel gas rooms.
Standby power shall be provided for hydrogen fuel gas rooms as required by the *International Fire Code*.

[F] 2702.2.13 Laboratory suites.
Standby or emergency power shall be provided in accordance with Section 5004.7 of the International Fire Code where laboratory suites are located above the sixth story above grade plane or located in a story below grade plane.

[F] 2702.2.14 Means of egress illumination.
Emergency power shall be provided for means of egress illumination as required in Section 1008.3. The system shall be capable of powering the required load for a duration of not less than 90 minutes.

[F] 2702.2.15 Membrane structures.
Standby power shall be provided for auxiliary inflation systems in permanent membrane structures as required in Section 3102.8.2. Standby power shall be provided for a duration of not less than 4 hours. Auxiliary inflation systems in temporary *air-supported* and air-inflated membrane structures shall be provided in accordance with Section 3103.10.4 of the *International Fire Code.*

[F] 2702.2.16 Semiconductor fabrication facilities.
Emergency power shall be provided for semiconductor fabrication facilities as required in Section 415.11.11.

[F] 2702.2.17 Smoke control systems.
Standby power shall be provided for smoke control systems as required in Sections 404.7, 909.11, 909.20.7.2 and 909.21.5.

[F] 2702.2.18 Special purpose horizontal sliding, accordion or folding doors.
Standby power shall be provided for special purpose horizontal sliding, accordion or folding doors as required in Section 1010.3.3. The standby power supply shall have a capacity to operate not fewer than 50 closing cycles of the door.

[F] 2702.2.19 Underground buildings.
Emergency and standby power shall be provided in underground buildings as required in Section 405.

[F] 2702.3 Critical circuits.
Required critical circuits shall be protected using one of the following methods:

1. Cables, used for survivability of required critical circuits,that are listed in accordance with UL 2196 and have a *fire-resistance rating* of not less than 1 hour.
2. *Electrical circuit protective systems* having a *fire-resistance rating* of not less than 1 hour. *Electrical circuit protective systems* are installed in accordance with their listing requirements.
3. Construction having a *fire-resistance rating* of not less than 1 hour.

[F] 2702.4 Maintenance.
Emergency and standby power systems shall be maintained and tested in accordance with the *International Fire Code*.